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## Fakery and science

Fake news — deliberately misleading information — is a hot topic in the media.<sup>1</sup> Despite the irony in this, there seems good reason for concern. The Pope's endorsement of Donald Trump was apparently the most read item of news on Facebook in the 3 months leading up to the US Presidential Election.<sup>2</sup> Of course, neither the Pope nor even Denzel Washington did endorse the man who surprised many by winning.<sup>3</sup> But an important question was raised: how much are we being duped?

A few months ago, the *Independent* newspaper published its own analysis of fake health news on social media sites. It said: 'Of the 20 most-shared articles on Facebook in 2016 with the word "cancer" in the headline, more than half report claims discredited by doctors and health authorities or — in the case of the year's top story — directly by the source cited in the article.'<sup>4</sup>

It isn't my go-to source for health information, but Facebook does have about 1.86 billion 'monthly active' users worldwide.<sup>5</sup> So stories on it have a massive potential circulation. By contrast, though exact figures are not available, this journal is sent to over 50 000 clinicians and researchers each month; how many of them are 'monthly active' is unknown.

Taking refuge in the scientific press would seem much safer even so. After all, peer review of the quality of the science presented comes as standard, or at least the facts are checked.

But then you look at a cross-sectional study of drug trials and you see that having a financial tie to the manufacturer of a study drug is an independent predictor of positive study outcome.<sup>6</sup> That raises your eyebrows, doesn't it? Surely it at least makes you wonder how something so non-scientific as cash payments can cause a measurable effect on the science?

Look next at a recently published study that describes itself as a 'meta-epidemiological survey'.<sup>7</sup> Weird as that sounds, it is a review of scientific claims based on subgroup analyses. Out of 64 randomised controlled trials reviewed, 117 claims were made in all. Of these, only 46

were supported by their own data and most of those had other reasons for doubt, such as lack of randomisation in the subgroups. Only five had at least one subsequent corroboration attempt, and none of those had a positive outcome.

Let me repeat that: of 117 scientific claims analysed, most were not supported by their own data and none was backed up by later research. What if this stuff was translated into guidelines?

It is harder to find the smoking gun this time but the GOLD COPD guidelines<sup>8</sup> are curious. Their first iteration, in 2001, introduced a new diagnostic threshold for COPD that resulted in its apparent prevalence rising from 13% to 22%.<sup>9</sup> A staggering change, by anyone's standards, and without any evidence that all those extra patients would benefit from the diagnosis or its medication. Is it just coincidence that GOLD is funded by 'unrestricted educational grants' from a raft of companies that benefit from COPD-related sales?

Centralised science policymaking surely magnifies any risks from wrong turns, manipulations, and fakery. Globalisation means the exposed population might even exceed Facebook's numbers.

Imagine, for example, if it turned out that saturated fat was not a villain after all.<sup>10–11</sup> Imagine if it turned out that, during all those years of blaming saturated fat for heart disease and obesity, the real culprit was being promoted as a healthier option.<sup>12</sup>

And imagine if the source was neither Facebook nor the Easter Bunny.

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